1992

Team Learning: A Comprehensive Approach for Harnessing the Power of Small Groups in Higher Education

Larry K. Michaelsen
University of Central Missouri, lmichaelsen@ucmo.edu

Team Learning: A Comprehensive Approach for Harnessing the Power of Small Groups in Higher Education

Larry K. Michaelsen

The University of Oklahoma

This paper describes Team Learning, a comprehensive, group-based instructional format that was originally developed to facilitate active learning in large classes, but has subsequently proven to be effective in a wide variety of instructional settings. The primary features of the approach include: 1) permanent and purposefully heterogeneous work groups; 2) grading based on a combination of individual performance, group performance, and peer evaluation; 3) a majority of the class time devoted to small group activities; and 4) a six-step instructional activity sequence that makes it possible to focus the majority of class time on helping students develop the ability to use concepts as opposed to simply learn about them. The author also compares Team Learning to other instructional approaches and discusses the use of group activities as a supplement to lectures.

The past decade has produced a growing body of evidence that small group-based instructional methods can be used to promote the achievement of a wide variety of desirable educational outcomes in higher education. These include the development of higher level learning and problem solving skills (Kurfiss, 1988), enhancing the effectiveness of computer-based instruction (Light, 1990; Wojtkowski & Wojtkowski, 1987), eliminating the

basis for stereotypes based on race, gender, and physical handicaps (see the review by Johnson, Johnson, & Maruyama, 1983) and reducing drop-out rates for accounting students (Wilson, 1982) and science majors (Tobias, 1990).

In spite of this evidence, however, the use of small group-based instructional methods is still much more of a novelty than a common practice in college courses for two main reasons.[1] First, most university faculty members' approaches to teaching appear to be guided by the assumption that the only way to ensure that students are exposed to course concepts is by personally going over the material in class. Thus, they genuinely feel that using class time for group work sacrifices basics for frills because doing so automatically results in a reduction of the amount of material they can "cover." Second, very few college educators have received formal training for their teaching roles, and fewer still have been trained in the use of groups. Further, having experienced group work from a student's perspective is probably of little help other than alerting them to the fact that using groups is no guarantee that students will learn more or that they will be more satisfied with their experience in the class.

As a result of these factors, most faculty members, if they use groups at all, employ strategies that are typically so narrow in scope that the results are self-limiting and may even be self-defeating. For example, the two most common uses of groups are forming temporary groups in which students are asked to talk about a specific issue as a precursor to a class discussion and assigning a single group project (with little or no class time devoted to group work). Although these approaches are likely to have positive, but modest, effects on learning (see Fiechtner & Davis, 1985), both are subject to serious limitations. The main problem with temporary groups is that the limited degree of commitment to and the quality of the work produced by newly-formed groups are likely to be very limited (Watson, Michaelsen, & Sharp, 1991). Further, members of groups that work mostly outside of class on a single project are likely to encounter serious problems from scheduling difficulties and an inability to divide the work load equitably (see Fiechtner & Davis, 1985). Fortunately, the majority of the liabilities of using group discussions or a group project as a supplement to lecture-oriented classes can be turned into assets by using group activities as the primary instructional medium. Doing so, however, requires a comprehensive strategy in which the majority of class time is spent working in groups. Further, it is imperative

[1] These conclusions are based on feedback from over 500 faculty members on several dozen campuses where I have conducted workshops on teaching with small groups.

that the composition of the groups, grading policies and procedures, and nature of class activities are all mutually supportive and that the instructor's primary role shifts from dispenser of information to manager of a learning process.

Team Learning Defined

The purpose of this paper is to describe a comprehensive group based approach, Team Learning (see Michaelsen, Watson, Cragin & Fink, 1982; Michaelsen, Watson, & Schraeder, 1985), that was originally developed to facilitate active learning in large classes, but has subsequently proven to be effective in a wide range of instructional settings. These include class sizes ranging from 10 to 280 students, with courses in over 30 academic disciplines, and with students ranging from freshmen on academic probation, through doctoral-level students and even participants in corporate-sponsored professional and management development courses. The primary features of Team Learning (TL) include: 1) permanent and purposefully heterogeneous work groups; 2) grading based on a combination of individual performance, group performance, and peer evaluation; 3) the majority of the class time devoted to small group activities (necessitating a shift in the role of the instructor from dispenser of information to manager of a learning process); and 4) a six-step instructional activity sequence, repeated several times per term (see Figure 1) that makes it possible to focus the vast majority of class time on helping students develop the ability to use concepts as opposed to simply learn about them (i.e., develop higher level cognitive skills, Bloom, 1956).

The instructional sequence used in TL has a great deal in common with two other widely used and highly successful instructional approaches: mastery learning and cooperative learning. Steps one, two, and five (see Figure 1) serve the same function in TL as formative testing in the mastery learning process (see Bloom, 1971). They furnish data so misunderstandings can be detected before students experience the frustration of trying to assimilate new concepts for which they are unprepared or trying to apply concepts that they do not understand (Bloom, Madaus, & Hastings, 1981, p. 156). Steps three and four, which involve group interaction, add a number of dimensions characteristic of cooperative learning (see Johnson & Johnson, 1983; Slavin & Karweit, 1981). For example, the discussions during the group exams routinely require students to reveal both how they answered each question and the rationale upon which they based their answer. This process aids learning in two ways. First, students have access to individualized corrective instruction from their peers on an ongoing basis. Second, the process of

articulating the rationale for a particular answer in itself promotes learning (e.g., see Slavin & Karweit, 1981.)

In addition, steps four and five provide corrective instruction if the dominant view within the groups is in error. During preparation of the appeals, students are highly motivated to reexamine the relevant sections of their assigned readings, and they have the other members of their group as resources. In fact, with an entire group of students scanning the material, only rarely are they unable to locate the needed references quickly. Thus, by the time the instructor's input is called for in step five, most of the basic questions have been answered, and the students have aided each other in completing a review of the troublesome concepts.

Figure 1
Team Learning Instructional Activity Sequence
(Repeated for each major unit of instruction -- typically 5-7 times in any given course.)

1. Individual Study
(of assigned reading material)

⇩

2. Individual Test
(15-20 multiple choice questions over assigned readings and/or homework-type problems; scored during group test if possible)

⇩

3. Group Test
(same questions/problems as individual test; groups must be given immediate feedback by scoring exam or providing prepared "correct" answer)

⇩

4. Preparation of Written Appeals
(open book; from groups only)

⇩

5. Instructor Input
(in response to students' remaining questions or the instructor's perceptions of the issues about which additional input is needed)

⇩

6. Application-Oriented Activities, Projects and Exams
(Approximately 80% of Total in-Class Time)
(should look -- and feel -- like the kinds of things you'd hope students would be able to **do** once they have completed the course/unit of instruction)

Minitests
(Approximately 20% of total in-class time; Given at the beginning of each major unit of instruction)

Guidelines for Using Team Learning

Answering Key Design Questions

Many of the strategic decisions required in designing a course for TL can be made by answering three questions. These include:

1. *What do I want students to be able to do when they have completed this unit of instruction (or course, program of study, etc.)?* This question identifies the desired outcome(s) of the instructional process and the nature of the activities that can be used to develop and assess students' higher level cognitive skills (Bloom, 1956). Some examples might include being able to read lab reports of blood and urine analyses and describe the chemical processes that might have produced the observed outcomes (for an organic chemistry course in a first year medical school curriculum), or being able to isolate and rationally weigh the relevant factors when confronted with a "buy/lease/rent" decision (for a course in financial management).

2. *What will students have to know to be able to do #1?* This question defines the content that must be covered in assigned readings or in other ways.

3. *How can I tell what students have already learned on their own or from each other so I can build from there (rather than assume that they do not know anything and start from scratch)?* This question guides the development of minitests and application-oriented projects and exams (see Figure 1).

Once the course objectives and content are set, it is then possible to design the day-to-day operational aspects of a course so that they will also be mutually supportive. These include determining the composition of the groups, establishing the nature of the grading system, developing the activities and exams, and determining the procedures used to manage the class and promote the development of performance-oriented group norms.

Forming Team Learning Groups

There are two key principles to remember in forming Team Learning groups. One is that member assets (e.g., full-time work experience, previous relevant course work, access to perspectives from other cultures, etc.) and also member liabilities (e.g., negative attitudes towards the course, limited fluency in English, etc.) should be evenly spread across the groups. The other is that the groups should not be formed in a way that results in unnecessary barriers to group cohesiveness. For example, one of the greatest barriers to group cohesiveness can be a previously established relationship between a subset of the members in a group (e.g., boyfriend/girlfriend, fraternity

brothers, sorority sisters, etc.). Such relationships can form the basis for a cohesive subgroup from which other members are likely to feel excluded for the entirety of a course. As a result, allowing students to form their own groups practically ensures the existence of potentially disruptive subgroups and creates potential trouble for a variety of other reasons (see Fiechtner & Davis, 1985).

The process for making group assignments should be as visible as possible to the students. This procedure alleviates student concerns about any ulterior motives the instructor may have for assigning students to groups. An effective and practical approach to forming the groups is to gather data orally about students' backgrounds on the dimensions important to group success. The groups can then be formed by: 1) deciding on the total number of groups desired (I usually have 5 to 7 people per group); 2) asking students possessing a specific asset to stand (taking the rarest important category first); 3) having those standing "count-off" by the total number of groups; and 4) repeating steps #2 and #3 with different categories of students until everyone in the class has been assigned to a group.

Establishing a Grading System

Team Learning requires a grading system that ensures both individual accountability and incentives for group work. As a result, I recommend a grading system in which a part of the grade is based on each of three components: individual performance (i.e., individual scores on minitests and other exams), group performance (i.e., group scores on minitests and other graded projects and exams), and a peer evaluation. The individual performance component ensures individual accountability for completing the reading assignments or other homework. The group performance component provides incentives to support the development of group cohesiveness and to justify putting effort into group work. The peer evaluation provides an incentive for participating in group discussions and also tends to remove students' fear of having to choose between either getting a low grade on the group assignments or having to do most of the group work (if other group members might not do their fair share).

The final decision on the weight of each of these components should be a function of three factors. One is that each of the components should be given enough weight so it is clear to students that the instructor thinks it is important. Second, the instructor must be personally comfortable with administering the chosen grading system. Finally, the grading system must be responsive to student concerns for fairness and equity.

In my classes, I involve students in the development of the grading

system through an exercise called "Setting Grade Weights" (see Michaelsen, Cragin, & Watson, 1981). This exercise, in which I set limits and representatives of the groups then negotiate to reach a mutually acceptable set of weights for each of the grade components, is a highly effective way to accomplish a number of important objectives, including: 1) clearly demonstrating that the roles of both the instructor and students in the class will be different from most other courses; 2) building group cohesiveness; and 3) ensuring that both group performance and peer evaluation are an integral part of the grading process.

Using Minitests to "Cover" Content Without Lectures

The heart of the Team Learning model is the six-step instructional activity sequence that is repeated several times per term (see Figure 1). Probably the most unique feature of this sequence is that there are no formal presentations by the instructor until students have studied the material and taken a "minitest" — steps 2-5 in the sequence (for further information see Michaelsen, Fink, & Watson, in press; Michaelsen, Watson, & Schraeder, 1985).

The minitests are a significant part of the learning process for four major reasons. First, they create opportunities and incentives for students to accept responsibility for their own learning instead of creating a dependency on the instructor. Students who complete their assigned homework are rewarded by higher scores on the individual tests and by contributions to the success of their group. Second, if need be, students are exposed to and receive feedback on their understanding of the key concepts at least six different times in very different ways (see Figure 1). In most instances, the students are initially exposed to concepts through assigned readings. The additional exposure during the individual test helps reinforce their memory of what they learned during their individual study (for a discussion of the positive effects of testing on retention, see Nungester & Duchastel, 1982). During the group tests, students receive oral input from their peers that often broadens their understanding, and they also benefit from acting in a teaching role (for a discussion of the cognitive benefits of teaching, see Bargh & Schul, 1980; Slavin & Karweit, 1981). During the appeals, students engage in a focused restudy of particularly troublesome concepts. This process is followed by oral input from the instructor that is specifically designed to resolve any remaining misunderstandings unearthed by the three previous steps in the process. Subsequently, students are exposed to the concepts again as they try to use them while working on application-oriented activities and exams. A third reason why minitests are important is that they are extremely effective in

building group cohesiveness that, in turn, enables instructors to rely on group norms to provide motivation for individual study and class attendance. Comparisons of individual and group scores provide feedback that helps the groups become more effective (see Watson et al., 1991). Groups learn very quickly the importance of ensuring that no one dominates. As a result, more vocal members talk less, listen more, and encourage quieter members to participate in the discussions. Fourth, the minitests are such an efficient way to expose students to conceptual material that approximately 80% of class time can be spent on application-oriented class activities such as solving problems or completing assignments either using specific concepts or thinking through how several concepts relate to each other.

Immediate feedback. In my judgement, when true/false and multiple choice questions are used in the minitests, the most effective way to handle test scoring is to use optically scanned answer sheets and score them on the spot with a portable mark-sense scoring machine.[2] This procedure minimizes scoring errors and simultaneously allows instructors to provide immediate feedback on both the individual and group exams. In instances where the minitests consist of problems or short answer essays, I recommend having students put their individual answers in a clear plastic folder during the group test (so that they can see them but will not be tempted to change them) and hand both the individual and group answers in at the same time. I then recommend giving a solution (or list of key points that should have been covered) that can be prepared and duplicated prior to class.

Appeals. The appeals process (see Figure 1) is a very effective way of increasing both learning and group cohesiveness. When it is properly managed, the process galvanizes students' negative emotional energy from having missed an exam question into a focused review of potentially troublesome concepts. After having used and/or observed a number of approaches for managing the appeals process, I recommend that:

- A written explanation of why appeals are allowed and instructions for preparing and submitting them should be attached to the inside of the group folder. For the first minitest, the first person to finish the individual exam in each group should read the instructions so that he/she can coach the group through the appeals process.
- Appeals should be written. (I recommend using an appeals form that asks students to specify the question involved, their preferred correct answer, the basis for their appeal, and the evidence that supports their

[2] I use a machine from a firm called Scantron Corporation. The firm provides the equipment free of charge — as long as you purchase a minimum volume of forms on an annual basis — for more information call 1-(800) 421-5066, extension 650.

point of view.) Requiring groups to put their thoughts in writing forces students to formulate their reasoning in a systematic way and also gives the instructor the opportunity to evaluate their arguments in the privacy of his or her office and avoid a public debate about the merits of the appeal.

- Only group appeals should be accepted. Individual appeals are detrimental in two ways. First, individual appeals are a barrier to group cohesiveness because they remove an important source of interdependence among group members. Second, individual appeals reduce the learning that normally takes place as groups prepare appeals (i.e., if individuals can get credit on their own, without having to challenge others' ideas, there is no incentive for working to achieve agreement as a group.)
- When an appeal is granted, credit should be given to both the group and each individual in that group but not to members of other groups. This procedure increases learning by both encouraging appeals and enhancing group cohesiveness because it forces each group to act on its own behalf.

Instructor input. The instructor input should be very focused and brief. By this point in the minitest process (see Figure 1), most groups have successfully developed a sound understanding of the material covered in the tests. If not, however, the instructor has the opportunity to resolve any student misunderstandings that still exist. Thus, I typically remind students that the reason for the testing process is to prepare them for the application-oriented activities and projects that are to follow and ask them to identify any of the questions that they would like me to discuss before we move on to the next activity or the next unit of material. In addition, at this time I typically present any related material that may not have been adequately treated in the readings.

One caution is in order with respect to this phase of the minitest process. Students who have convinced their peers to accept an incorrect answer may try to save face by defending their point of view orally. This situation creates problems for two reasons. First, such students are often so emotionally involved that they do not listen very well. Second, the majority of the class usually does not care one way or the other and will feel that time is being wasted if the discussion lasts for any length of time.

When faced with students who appear to be defending an appeal orally, I try to minimize the situation by:

- reminding the class (and myself) that the purpose of the minitest process is to make certain that the students understand the concepts before they

are asked to apply them and then focus the discussion on the concepts rather than the questions.

- making it clear that I cannot and will not make a judgement on the students' appeal at this point because I would not be able to do a thorough job of evaluating the appeal until I have the opportunity to consider both the evidence they provide and the context from which it was taken. As a result, the argumentative student will have to wait until I have the chance to look over the reading material before I can make thoughtful decisions on the appeal.

Developing Group Assignments and Activities

A key element in the success or failure of any group-based instructional approach, including Team Learning, is the nature of the group assignments. To be effective, group assignments, whether graded or not, should be designed and managed to accomplish three important objectives simultaneously: promoting learning of essential concepts or skills, building group cohesiveness, and ensuring individual accountability. Activities that sacrifice one (or even possibly two) of these objectives can still be used, however. The key is maintaining an overall balance. For example, activities that primarily promote learning are perfectly appropriate if they are interspersed with activities that build group cohesiveness and individual accountability. Otherwise, the groups will deteriorate to the point of ineffectiveness.

Activities for developing students' higher level cognitive skills. One of the greatest challenges of using Team Learning is designing activities and assignments that are appropriate for developing students' higher level cognitive skills (e.g., Bloom, 1956). Because of the efficiency of the minitests in helping students master basic concepts, new users of TL who have traditionally focused the majority of their teaching on simply "covering" content have a great deal of class time available for helping students learn to use the concepts. They have, however, seldom thought about how to help students learn at these higher cognitive levels.

On the other hand, instead of carrying the entire burden for learning (i.e., see the "Atlas complex" in Finkel & Monk, 1983), instructors who use minitests to cover course content have two additional assets to work with. First, students already have a sound understanding of the key concepts (i.e., groups typically score 90% or better on the minitests). Second, the groups are both cohesive and quite effective at utilizing their members' intellectual resources (i.e., 97% of the groups will score higher than their best member on the minitests. See Michaelsen, Watson, & Black, 1989). Thus, with the

support from their groups, students can successfully tackle problems that are far too difficult for even the most talented individuals working alone.

Characteristics of effective group assignments. Not all assignments, however, are equally helpful in building students' higher level cognitive skills. The nature of the group tasks has a tremendous effect on the quality of the learning experience they provide. To work well, application-oriented group assignments:

- must require the groups to produce a tangible output. Otherwise, neither the instructor nor the students will have any idea about the effectiveness of the groups.
- must be impossible to complete unless students understand course concepts. Otherwise, students are likely to see them as irrelevant "make work" projects, and neither the instructor nor students will have any idea how well the concepts are understood.
- must be difficult enough that very few, if any, of the students can successfully complete the assignments working alone. Otherwise, the majority of group members will sit back and watch the better students do the work.
- should allow the groups to spend the majority of their time engaged in the kinds of activities that groups do well (e.g., identifying problems, formulating strategies, processing information, making decisions) and a minimum of time engaged in activities that individuals could do more efficiently working alone (e.g., creating a polished written document).
- should give students the opportunity to practice dealing with the same kind of issues and problem situations they will encounter in later course work or in future jobs. Being able to see how the concepts apply to realistic problems is a tremendous asset to both motivation and learning.
- should be interesting and/or fun.

Ensuring the Development of Performance-Oriented Group Norms

Much of the effectiveness of group-based instructional approaches, including TL, is dependent upon the development of group norms that motivate individual members to attend class and be prepared for group work. Such group norms, however, will only develop if the instructor designs and manages the class so that groups are able to monitor and provide feedback to individual members. Three very simple but effective mechanisms for empowering the groups in this way include: 1) providing information that allows the students to assess their group's effectiveness relative to other groups (e.g., having students post their group minitest scores invariably

results in cheers when groups do well and groans when their scores are low); 2) basing part of the grade on a peer evaluation; and 3) having groups maintain an ongoing record of their members' performance and attendance.

Peer evaluation. Peer evaluations serve a number of functions within the groups. Depending on the nature of the tasks one assigns to the groups, I recommend conducting the peer evaluation in one of two ways. One is by having students submit an assessment of members' contributions on a project-by-project basis (e.g., Abelson & Babcock, 1986). With this approach, individual scores are typically generated by multiplying the group score for the project by the average of the ratings received from the other members in the group. The other approach is having students provide an overall peer evaluation. In either case, however, it is important to use a scoring system that differentiates within, but not between, groups. Grading peers is difficult, and if students have the option of giving everyone in their group a high grade, that is exactly what they will do.[3]

Feedback on attendance and performance. Another effective way to encourage development of group norms for class preparation and attendance is to provide the groups with data on how their members are doing. I ensure that they have access to these data by attaching a form to the front of a folder that I hand out each time the class meets. The form requires that the groups keep track of how they are doing. It contains spaces where students fill in their own scores on the individual and group minitests and other assignments and indicate how many members (but not who) were absent and whether or not group members knew of the absences in advance. Even though the scores are shown according to ID numbers rather than names, the performance is public enough to support the development of strong group performance-oriented norms. In addition, having the groups record whether any absences were known in advance encourages both attendance and individual responsibility to the group.

Benefits of Using Comprehensive Group-Based Instruction

Using groups, even in a casual way, produces benefits that cannot be achieved with students in a passive role (see Bargh & Schul, 1980; Fiechtner & Davis, 1985; Slavin & Karweit, 1981). On the other hand, using groups in

[3] I typically give students an average of 10 points to assign among the *other* members of their group (i.e., 50 points in a six member group), prohibit individual raters from giving everyone the same score, and compute a score for each student that is the sum of the points they received from the other members of their group.

a comprehensive way allows the achievement of important outcomes that simply cannot be obtained unless the groups have a substantial degree of permanence. These include using instructional resources efficiently without sacrificing the ability to develop students' higher level cognitive skills, providing social support for students, promoting the development of interpersonal and group skills, and building and maintaining the enthusiasm of faculty members.

Using Instructional Resources Efficiently

A key advantage of using small groups in a comprehensive way is that they can be used to offset many of the disadvantages of large classes (e.g., Michaelsen, et al., 1982). For example, not only are they a highly effective means, they may be the only means of building students' higher-level cognitive skills in classes of up to several hundred students (see Kurfiss, 1988). Temporary groups can provide a valuable aid in small classes where the instructor's physical presence is sufficient to ensure that no one "escapes" (either physically or mentally) and that students are actually working on assigned tasks. In large classes, however, the situation is very different. Unlike TL groups, temporary groups simply cannot exert enough influence on their members to do such things as motivate attendance, handle discipline problems, and engage members who would benefit from group work but, given the opportunity, would rather work alone (e.g., see Light, 1990).

Providing Social Support for Students

The influence of groups used in a supplementary way typically ends when the class period is over, whereas students in TL classes have a social support base that is beneficial in many additional ways. For example, the same mechanisms that have been shown to reduce stereotypes of racial and ethnic minorities and physically handicapped students (see Johnson, Johnson, & Maruyama, 1983) and increase self-esteem among elementary and secondary students (see Johnson & Johnson, 1983), operate in college classrooms and have an extremely positive effect on students who would otherwise be disadvantaged. International students find lasting friendships and grow in their understanding of a new culture; older students discover that their accumulated life awareness is an appreciated and valuable asset; students who are at risk of dropping out form working relationships that assure them of help in future assignments and classes; and students who are having difficulty maneuvering their way through the campus bureaucracy have a ready source for answers to their questions and concerns.

Developing Interpersonal Skills

Students also benefit from interacting in a situation in which group work really counts. Unlike temporary groups where tough interpersonal issues can be avoided simply by waiting until the end of the class period, students in TL classes cannot really escape the problems they encounter in their groups. As a result, many learn lessons about themselves that allow them to be more effective and productive when they finish school and enter the work force. For example, students who are intellectually capable but socially unskilled, learn through exposure to more positive role models and through input from peers who have enough at stake that they are willing to give helpful (but not always positive) feedback. In addition, because students have to learn to work together, they develop the understandings and skills they need to work productively as task group members. Finally, part of effective group work is believing that the benefits of working in groups outweighs the costs. Unlike groups used in a supplementary way, the vast majority of TL groups provide solid evidence of the tremendous potential of effective groups.

The major benefit of TL is that the vast majority of students do, in fact, respond positively to the challenge. Although there are typically some initial struggles, the groups' capabilities steadily increase to the point that students feel more like colleagues than "empty vessels." As a result, students grow in self-confidence and build a sound understanding of both the concepts and ways to use them.

Building and Maintaining Instructor Enthusiasm for Teaching

Finally, but possibly most important, using comprehensive group-based teaching approaches, such as Team Learning, has a tremendous positive impact on the instructor. For example, being responsible for creating enthusiasm and excitement about basic, but essential, material is a burden that few are able to carry for long without burning out. As a result, even the most dedicated and talented instructors are likely to try to find ways of reducing their teaching load. Fortunately, with TL, the groups handle many of the aspects of teaching that, for most, are simply drudgery. For example, the instructor almost never has to go over basic concepts or answer simple questions. The minitests handle that task with ease and most of the remaining questions, even in basic courses, are challenging enough to be interesting. In addition, instructors rarely have to worry about attendance problems. Students come to class because they want to. As a result, the real challenge for

instructors is finding challenging and interesting things for them to do once they get to class.

Another reason that TL builds enthusiasm for teaching is that most of the necessary changes are structural. Instead of trying to make one's presentations more interesting and exciting, the major focus is on designing courses to give students opportunities and incentives to accept more responsibility for ensuring that learning occurs. Thus, much of the new learning for instructors has to do with designing courses and group activities. In the class itself, the most difficult new skill for many instructors is learning to support groups in their struggles to become effective without making them dependent on outside help. The natural outcome of empowering groups with appropriate grading systems and meaningful assignments is that students willingly share responsibility to ensure that learning occurs. As a result, teaching with Team Learning is simply more fun.

References

Abelson, M. A., & Babcock, J. A. (1986). Peer evaluation within group projects: A suggested mechanism and process. *The Organizational Behavior Teaching Review, 10* , 98-100.

Bargh J. A., & Schul, Y. (1980). On the cognitive benefits of teaching. *Journal of Educational Psychology, 74* (5), 593-604.

Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals.* New York: David McKay.

Bloom, B. S. (Ed.). (1971). *Mastery learning: Theory and practice.* New York Holt, Rinehart and Winston.

Bloom, B. S., Madaus, G. F., & Hastings, J. T. (1981). *Evaluation to improve learning.* New York: McGraw-Hill.

Fiechtner, S. B., & Davis, E. A. (1985). Why groups fail: A survey of student experiences with learning groups. *The Organizational Behavior Teaching Review, 9* , 58-73.

Finkel, D. L., & Monk, S. G. (1983). Teachers and learning groups: Dissolution of the Atlas complex. In C. Bouton, & R. Y. Garth (Eds.), *Learning in Groups* (pp. 83-98). *New Directions for Teaching and Learning, No. 14.* San Francisco: Jossey-Bass.

Johnson, D. W., & Johnson, R. T. (1983). The socialization and achievement crisis: Are cooperative learning experiences the solution? In L. Bickman (Ed.), *Applied Social Psychology Annual 4* (pp. 119-164). Beverly Hills: Sage.

Johnson, D. W., Johnson, R. T., & Maruyama, G. (1983). Interdependence and interpersonal attraction among heterogeneous and homogeneous individuals: A theoretical formulation and a meta-analysis of research. *Review of Educational Research, 53* (1), 5-54.

Kurfiss, J. G. (1988). *Critical Thinking: Theory, research, practice, and possibilities.* Washington, D.C., ASHE-ERIC Higher Education, Report No. 2.

Light, R. J. (1990). *The Harvard Assessment Seminars: Explorations with students and faculty about teaching, learning, and student life.* Cambridge MA: Harvard University.

Michaelsen, L. K., Cragin, J. P., & Watson, W. E. (1981). Grading and anxiety: A strategy for coping. Exchange: *The Organizational Behavior Teaching Journal, 6*, 8-14.

Michaelsen, L. K., Fink, L. D., & Watson, W. E. (in press). Effective minitests: An efficient solution to covering content. *Journal of Management Education.*

Michaelsen, L. K., Watson, W. E., & Schraeder, C. B. (1985). Informative testing: A practical approach for tutoring with groups. *The Organizational Behavior Teaching Review, 9*, 18-33.

Michaelsen, L. K., Watson, W. E., & Black, R. H. (1989). A realistic test of individual versus group consensus decision making. *Journal of Applied Psychology, 74* (5), 834-839.

Michaelsen, L. K., Watson, W. E., Cragin, J. P., & Fink, L. D. (1982). Team learning: A potential solution to the problems of large classes. *Exchange: The Organizational Behavior Teaching Journal, 7*, 13-22.

Nungester, R. J., & Duchastel, P. C. (1982). Testing versus review: Effects on retention. *Journal of Applied Psychology, 74*, 18-22.

Slavin, R. E., & Karweit, N. L. (1981). Cognitive and affective outcomes of an intensive student team learning experience. *Journal of Experimental Education, 50* (1), 29-35.

Tobias, S. (1990). They're not dumb. They're different: A new "tier of talent" for science. *Change, 22*, 11-30.

Watson, W. E., Michaelsen, L. K., & Sharp, W. (1991). Member competence, group interaction and group decision-making: A longitudinal study. *Journal of Applied Psychology, 3*, 231-248.

Wilson, W. R. (1982). *The use of permanent learning groups in teaching introductory accounting.* Unpublished Doctoral Dissertation, The University of Oklahoma.

Wojtkowski, W., & Wojtkowski, W. G. (1987). Utilizing group learning in computer information classes. *Journal of Education for Business, 62*, 347-352.